

Transition of the Sunspot Number from Zurich to Brussels in 1980: A Personal Perspective

J.O. Stenflo^{1,2}

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Abstract The Swiss Federal Observatory, which had been founded in 1863 by Rudolf Wolf, was dissolved in connection with the retirement of Max Waldmeier in 1979. The determination of the Zurich sunspot number, which had been a cornerstone activity of the observatory, was then discontinued by ETH Zurich. A smooth transition of the responsibility for the sunspot number from Zurich to Brussels could however be achieved in 1980, through which it was possible to avoid a discontinuity in this important time series. Here we describe the circumstances that led to the termination in Zurich, how Brussels was chosen for the succession, and how the transfer was accomplished.

Keywords: Sunspots, Statistics; Solar Cycle, Observations

1. Historical Overview

Although it is well known that the leading role that Zurich had in establishing and determining the relative sunspot number ended with Max Waldmeier's retirement from ETH Zurich, and that the responsibility for the continuation of this program was subsequently taken over by Brussels, few people really know why and how all this happened. As the successor on the ETH Chair of Max Waldmeier I happened to play a key role in this transition. In the popular media I was initially blamed for coming to Switzerland as a young Swede and without sensitivity abruptly discontinuing a century-old Swiss tradition. Figure 1 shows parts of the front page of a paper (Züri Leu) that was distributed free of charge to all households in the Zurich area.

With his strong personality Max Waldmeier had over the years made many enemies within the ETH, something that I learnt when I came there, although

✉ J.O. Stenflo
stenflo@astro.phys.ethz.ch

¹ Institute for Astronomy, ETH Zurich, CH-8093 Zurich, Switzerland

² Istituto Ricerche Solari Locarno, Via Patocchi, CH-6605 Locarno-Monti, Switzerland



Figure 1. Front-page news 20 May 1980: “Violent sunset” at the Swiss Federal Observatory.

my own encounters with him had always been very friendly and even cordial. Figure 2 shows how Waldmeier in 1979 ended his last Annual Report (Waldmeier, 1979) before his successor had been chosen, bitterly accusing the ETH of pursuing a policy over the previous several years with the aim of “ruining astronomy in Zurich”. The ETH wanted to use the opportunity of Waldmeier’s retirement to dissolve the Swiss Federal Observatory (Eidgenössische Sternwarte) to make a fresh start, preferably in an entirely new field of astronomy. Thus a US extragalactic astronomer was first offered the position, but as the negotiations with him fell through, the search committee had to make a new choice, and this time I got the offer. So it happened that solar physics could after all be continued in Zurich.

ETH dissolved the Eidgenössische Sternwarte and all of the positions related to the sunspot-number program a few months before I began my position on 1 April 1980, to give me a “clean table” to start with. However, I naturally

Die Träger der Hochschule sind die Professoren. Ihretwillen bedarf es einer Administration. Wenn diese sich aber zu einem eigenen Imperium aufbläht, werden die Träger der Wissenschaft zu Vasallen in der Abhängigkeit von Gunst und Mißgunst der Schulleitung. Diese ist an einem Punkt angekommen, wo sie ein völliges Unvermögen an den Tag legt, sachlich über Ansichten zu reden, welche nicht die ihren sind. Systemkritiker bleiben unverstanden und unerwünscht. Kommissionen haben blosse Alibifunktionen, wenn diejenigen, welche etwas zu sagen hätten, ausgeschlossen sind und auf jene gehört wird, welche sagen, was man hören will.

Als 1973 ein neuer ETH-Präsident das Amt antrat, mußte ich ihm schon nach wenigen Wochen mitteilen, daß seine Verfügungen geeignet seien, die Astronomie in Zürich zu ruinieren, und er hat es geschafft. Bei meinem Ausscheiden wird die Sternwarte noch zwei Assistenten haben wie schon im Jahre 1904 und von den 24 Räumen, die bisher ausschließlich durch die Astronomie belegt waren, werden ihr noch 6 verbleiben. Das ist

das Ende der Eidgenössischen Sternwarte.

30. Juni 1979

M. Waldmeier

Figure 2. Last page from Waldmeier’s final Annual Report, signed 30 June 1979, before his successor had been chosen. He declares that the “end of the Swiss Federal Observatory” has happened through a process that started many years before.

share responsibility for what happened, since ETH asked for my consent as the new professor before they executed these decisions. It was fully clear to me that the sunspot-number time series was of great importance to the wide scientific community and had to be continued. So why did I give my consent to this?

There were two main reasons: i) I saw that satisfactory alternative solutions for a responsible continuation of the sunspot-number time series existed. The overriding priority was that reliable determinations could be continued somewhere. For me with an international outlook it was not essential that it had to continue to be in Zurich. ii) Once I had come to understand the atmosphere at the ETH, it was clear that stubbornly clinging to the continuation of the Zurich role would block the opportunities to develop new research programs in solar physics.

Nevertheless it was also clear to me that the identification of a long-term solution to secure the continuation of the sunspot number had to be my first priority at the ETH, and that swift action on this matter was essential. In anticipation of Waldmeier’s retirement there had been discussions within the IAU about the long-term future of the sunspot number. In this context Alan Shapley of NOAA in Boulder, Colorado, USA, had done detailed statistical studies (Shapley, 1979) that showed excellent correlations between the Zurich sunspot number on the one hand and the corresponding number determined by the American Association of Variable Star Observers (AAVSO) on the other hand, as well as with the solar 10-cm radio flux measured at Ottawa. A large number of different observing stations sent their observations to Zurich, where the various inputs were weighted together to form the relative sunspot number.

Among the potential candidates, who were interested in taking over the responsibility for the determination of the sunspot number, were Madrid, Istanbul, Manila, and Pulkovo (Leningrad), but without any particular evaluation procedure it was clear to me that the best and most reliable choice would be the Observatoire de Bruxelles, where they had excellent experience over many years as a contributing station to the Zurich sunspot number. It was of great value that I happened to have been personally acquainted with the Director, André Koeckelenbergh, for several years, and I knew that he was highly motivated and conscientious, perfectly suited for taking over this task in a most responsible way. He had participated in a Workshop on Solar Polarization that I organized in Lund, Sweden, in 1977, so we had common scientific interests.

Therefore, only two weeks after I immigrated to Switzerland from Sweden and started my new job in Zurich I traveled to Brussels in mid-April 1980 to have direct discussions with Koeckelenbergh about the possibility of transferring the responsibility for the sunspot number from Zurich to Brussels and about the modalities for this transfer. From his enthusiastic response it was clear to me that this would be an excellent solution that should be implemented as soon as possible. During this process I also learnt that the most important observing station that carried by far the greatest weight in the determinations of the relative sunspot number was Specola Solare in Locarno, which had belonged to the Eidgenössische Sternwarte under Waldmeier, but which was taken over from the ETH by a local private foundation, Associazione Specolar Solare Ticinese (ASST), when ETH discontinued the sunspot number program. The long-term sunspot observer, Sergio Cortesi, could continue his work there, but now effectively in the capacity of being the *de facto* Director of Specola.

As a follow-up of my Brussels visit I organized a meeting on 4 June 1980, at the newly formed Institute of Astronomy of ETH Zurich that I was now directing. At this meeting we formulated a detailed plan, based on a draft by Koeckelenbergh, which described how the transfer to Brussels should be executed, and which also defined the future role that Specola should play in this context. This plan was unanimously accepted by the participants at the meeting, who included besides Koeckelenbergh and Cortesi also Max Waldmeier and the two main representatives of the Zurich sunspot program, A. Zelenka and H.U. Keller. According to our plan the transfer would be complete by the end of 1980, and from then on the designation would change from the Zurich relative sunspot number to the International Sunspot Number. Specola Solare with Sergio Cortesi as observer would continue to serve as the main observing station and be given the same dominant weight also for the International Sunspot Number. This would assure continuity so that the transition to Brussels would not lead to any glitch in the sunspot time series.

Two days after our ETH meeting, on 6 June, I informed the President of IAU Commission 10, Vaclav Bumba from Prague, about our plans. The IAU was pleased with this solution and happy to support it.

The backing by IAU was essential to make it unambiguously clear who was now in charge of the sunspot-number task, since there were other organizations who kept publishing their versions of the sunspot number. One of them was the Swiss military, who took over the funding of the long-term observer at the



Figure 3. Max Waldmeier in 1983 looking through the Fraunhofer refractor that had been used since the time of Rudolf Wolf to count the sunspots.

Eidgenössische Sternwarte in Zurich (H.U. Keller) when ETH terminated his employment, so that he could continue to count the spots as before. Figure 3 shows Waldmeier in 1983 looking through the Fraunhofer refractor, which continued to be used by H.U. Keller for the determination of the sunspot number at the Zurich Sternwarte.

2. Epilogue

After having successfully served as a kind of “midwife” to secure the long-term future continuation of the sunspot-number series through the transfer from Zurich to Brussels, I consciously tried to keep a distance from all of the activities related to the sunspot number, not only from the militarily supported work in Zurich, but to some extent also from the work at Specola, to avoid confusion, because Brussels had to be viewed as the sole organization in charge, and it needed to be clear that the activities in my ETH institute dealt with other aspects of solar physics. The distance that I kept from the sunspot number might have been interpreted as a disinterest, but I have always appreciated the importance and necessity of the sunspot record and have from time to time myself been a scientific user of this record.

Waldmeier suffered a stroke in 1986, which paralyzed him and left him in a debilitated state with little capacity left for speaking or comprehending language.



Figure 4. Max Waldmeier in the garden of his house in Zurich on 4 June 1992, during a visit by myself and Susi Weber, who served her whole professional life as astronomy secretary, first under Waldmeier, then for nearly two decades as my secretary.

This sad state lasted until his death in 2000. Figure 4 shows him in 1992 in his wheelchair during a visit by myself and my secretary, Susi Weber, who had also served for many years as Waldmeier’s secretary.

Looking back over the more than three decades that have since passed, I feel vindicated that we came up with a good solution back in 1980. The sunspot number series is in good hands.

References

- Shapley, A.H.: 1979, Internal Study for IAU Comm. 10, reported in a letter of 15 May 1979.
Waldmeier, M.: 1979, *Tätigkeitsbericht der Eidgenössischen Sternwarte Zürich für das Jahr 1978/79*, ETH, Zurich.